Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of detecting a target nucleic acid comprising:

a) hybridizing a single stranded target nucleic acid to a capture sequence probe and a signal sequence probe to form double-stranded hybrids between said probes and the target nucleic acid, wherein the capture sequence probe and the signal sequence probe hybridize~~are capable of hybridizing~~ to non-overlapping regions within the target nucleic acid and do not hybridize~~not being capable of hybridizing~~ to each other, wherein the signal sequence probe is unlabeled and said hybridization forms a sequence probe:target hybrid; and

b) adding a blocker probe to the hybridization reaction, wherein said blocker probe hybridizes to excess non-hybridized capture sequence probes;

c) capturing the sequence probe:target hybrid to form a bound hybrid; and

d) detecting the bound double-stranded hybrid.

2. (currently amended) A method of detecting a target nucleic acid comprising:

a) hybridizing a single-stranded target nucleic acid to an immobilized capture sequence probe and a signal sequence probe to form double-stranded hybrids between said probes and the target nucleic acid, wherein the capture sequence probe and the signal sequence probe hybridize to non-overlapping regions within the target nucleic acid and do not hybridize to each other;

b) adding a blocker probe to the hybridization reaction, wherein said blocker probe hybridizes to excess non-hybridized capture sequence probes;

c) detecting the bound double-stranded hybrid.

3. (original) The method of claim 1 or 2, wherein the capture sequence probe is modified with at least one ligand.

4. (original) The method of claim 1 or 2, wherein the signal sequence probe is unlabelled.

5. (original) The method of claim 3, wherein the ligand is biotin.

6. (original) The method of claim 5, wherein the capture sequence probe is linear having a 5' and 3' end, wherein both the 5' and the 3' ends are biotinylated.

7. (original) The method of claim 1 or 2, wherein the capture sequence probe and the signal sequence probe hybridize to regions of the target nucleic acid, wherein the regions are less than 3 kilobases apart.

8. (original) The method of claim 1 or 2, wherein the capture sequence probe and the signal sequence probe hybridize to regions of the target nucleic acid, wherein the regions are less than 500 bases apart.

9. (original) The method of claim 1 or 2, wherein the capture sequence probe is a fusion of two or more sequences complementary to different regions of the target nucleic acid or to different target molecules.

10. (original) The method of claim 1 or 2, wherein the double-stranded hybrid formed is a DNA-RNA hybrid.

11. (original) The method of claim 1 or 2, further comprising the step of forming single-stranded DNA prior to the hybridization step.

12. (original) The method of claim 1 or 2, wherein hybridization of the capture sequence probe and the signal sequence probe to the target nucleic acid are performed sequentially.

13. (original) The method of claim 1 or 2, wherein step a) and step b) are performed simultaneously.

14. (original) The method of claim 1 or 2, wherein the blocker probe has lower melting temperature than that of the capture sequence probe.

15. (original) The method of claim 1, wherein the hybrid is captured onto a solid phase.

16. (original) The method of claim 15, wherein the solid phase is coated with streptavidin.

17. (original) The method of claim 15, wherein the solid phase is a microplate.

18. (original) The method of claim 1 or 2, wherein step c) is carried out at room temperature.

19. (currently amended) The method of claim 1 or 2, wherein the bound <u>double-stranded</u> hybrid is detected using an antibody which recognizes a hybrid.

20. (original) The method of claim 19, wherein the hybrid is a DNA-RNA-hybrid.

21. (previously presented)The method of claim 20, wherein the antibody which recognizes a DNA-RNA hybrid is labelled with alkaline-phosphatase.

22. (previously presented)A method of detecting a target nucleic acid comprising:

a) hybridizing a single-stranded target nucleic acid to a capture sequence probe and a signal sequence probe, wherein the capture sequence probe and the signal sequence probe hybridizes to non-overlapping regions within the target nucleic acid and do not hybridize to each other, wherein said hybridization forms an RNA-DNA hybrid between said signal sequence probe and the target nucleic acid; and

b) detecting the RNA-DNA hybrid by binding an antibody which recognizes the RNA-DNA hybrid to said hybrid, wherein said antibody is detectably labelled.

23. (currently amended) The method of claim 22, further comprising capturing the hybrid formed in step a) to form a bound double-stranded hybrid.

24. (original) The method of claim 22, wherein the capture sequence probe is modified with at least one ligand.

25. (original) The method of claim 22, wherein the signal sequence probe is unlabelled.

26. (original) The method of claim 24, wherein the capture sequence probe is biotinylated.

27. (original) The method of claim 26, wherein the capture sequence probe is linear having a 5'and a 3' end, wherein both the 5' and the 3' ends are biotinylated.

28. (original) The method of claim 22, wherein the capture sequence probe and the signal sequence probe hybridize to regions of the target nucleic acid, wherein the regions are less than 3 kilobases apart.

29. (original) The method of claim 22, wherein the capture sequence probe and the signal sequence probe hybridize to regions of the target nucleic acid, wherein the regions are less than 500 bases apart.

30. (original) The method of claim 22, further comprising the step of forming single-stranded target DNA prior to the hybridization step.

31. (original) The method of claim 22, wherein hybridizations of the capture sequence probe and the signal sequence probe to the target nucleic acid are performed sequentially.

32. (original) The method of claim 1, wherein the hybrid formed in step a) is captured onto a solid phase.

33. (original) The method of claim 30, wherein the capture step is carried out at room temperature.

34. (original) The method of claim 22, wherein the solid phase is coated with streptavidin.

35. (original) The method of claim 22, wherein the solid phase is a microplate.

36. (original) The method of claim 22, wherein the antibody is labelled with alkaline-phosphatase.

37. (previously presented)The method of claim 20, further comprising adding a blocker probe to the hybridization step, wherein said blocker probe hybridizes to excess non-hybridized capture sequence probes.

38. (original) The method of claim 37, wherein the blocker probes are added to the hybridization reaction following the hybridization of the capture sequence probes to the target nucleic acid.

39. (original) The method of claim 37, wherein the blocker probe has lower melting temperature than that of the capture sequence probe.

40. (currently amended) A method of detecting a target nucleic acid comprising:

a) hybridizing a single stranded target nucleic acid to a capture sequence probe and a signal sequence probe, wherein the capture sequence probe and the signal sequence probe hybridize~~are capable of hybridizing~~ to non-overlapping regions within the target nucleic acid and do not hybridize~~not being capable of hybridizing~~ to each other, wherein the signal sequence probe is unlabeled and comprises a double-stranded DNA-RNA hybrid region, wherein said hybridization forms a complex; and

b) detecting said complex.

41. (original) The method of claim 40 wherein the capture sequence probe is immobilization on a solid matrix.

42. (previously presented)The method of claim 40 wherein said complex is detected by binding an antibody which recognizes the DNA-RNA hybrid region to said region, wherein the antibody is detectably labelled.

43. (original) The method of claim 40 wherein the capture sequence is modified with at least one ligand.

44. (original) The method of claim 43 wherein the ligand is biotin.

45. (original) The method of claim 44 wherein two biotin molecules are attached to the capture sequence probe.

46. (original) The method of claim 40, further comprising adding a blocker probe after the hybridization step, wherein said blocker probe hybridizes to excess non-hybridized capture sequence probe.

47. (withdrawn) A nucleic acid probe consisting of a sequence selected from the group consisting of SEQ ID NO:1 through SEQ ID NO:160.

48. (previously presented)The method according to claim 1, wherein the signal sequence probe comprises a DNA-RNA duplex and a single stranded nucleic acid sequence which hybridizes to the target nucleic acid.

49. (original) The method according to claim 48, wherein the DNA-RNA duplex is a M13 DNA-M13 RNA duplex.

50. (currently amended) A method of detecting a target nucleic acid comprising:

a) hybridizing a single-stranded target nucleic acid to a capture sequence probe, a bridge probe and a signal sequence probe to form double-stranded hybrids between said capture sequence and bridge probes and the target nucleic acid, wherein the capture sequence probe and the bridge probe which hybridizes to non-overlapping regions within the target nucleic acid and do not hybridize to each other, and the signal sequence probe hybridizes to the bridge probe and does not hybridize to the target nucleic acid and the capture sequence probe;

b) adding a blocker probe to the hybridization reaction, wherein said blocker probe hybridizes to excess non-hybridized capture sequence probes;

c) capturing the hybrid to form a bound double-stranded hybrid; and

d) detecting the bound double-stranded hybrid.

51. (previously presented)The method according to claim 50, wherein the signal sequence probe comprises a DNA-RNA duplex and a single stranded nucleic acid which hybridizes to the bridge probe.

52. (original) The method according to claim 51, wherein the DNA-RNA duplex is a M13 DNA-M13 RNA duplex.

53. (original) The method according to claim 51, wherein the DNA-RNA duplex is a hybrid formed between repeat sequences within the signal sequence probe and a nucleic acid molecule having complementary sequences to the repeat sequences.

54. (original) The method according to claim 50, wherein the bridge probe further comprises a poly(A) tail.

55. (currently amended) The method according to claim 54, wherein the signal sequence probe comprises a single stranded poly(dT) DNA sequence which hybridizes~~is capable of hybridizing~~ to the poly(A) tail of the bridge probe, and a DNA-RNA duplex formed between the poly(dT) sequences in the signal sequence probe and a nucleic acid molecule having poly(A) sequences.